DOCUMENT RESUME

ED 099 457 UD 014 694

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TITLE	The Development of Project Information Packages for Effective Approaches in Compensatory Education. Final Report. Report No. UR-254.
INSTITUTION	RMC Research Corp., Los Altos, Calif.
SPONS AGENCY	Office of Education (DHEW), Washington, D.C. Office of Planning, Budgeting, and Evaluation.
REPORT NO	RMS-UR-254
PUB DATE	Oct 74
NOTE	48p.
EDRS PRICE	MF-$0.75 HC-$1.85 PLUS POSTAGE
DESCRIPTORS	Case Studies; *Compensatory Education Programs; Economically Disadvantaged; Educational Research; Evaluation Methods; *Federal Programs; *Information Dissemination; National Surveys; Program Descriptions; *Program Evaluation; Research Methodology; *Success Factors; Underachievers

ABSTRACT

The project described herein represents an attempt by the U. S. Office of Education to take a more active role in the national dissemination and replication of those programs which have achieved the greatest success in producing reliably measured achievement benefits in reading and mathematical skills. With this general objective in mind, the U. S. Office of Education's Office of Planning, Budgeting, and Evaluation initiated a multiyear investigation of the feasibility of packaging exemplary projects in sufficient depth and detail so that the packages themselves would constitute a viable means of replicating successful practices. The first year of the total investigation was concerned with the development of packaging concepts, and the subsequent selection and packaging of six projects for field tryout purposes. This work has been accomplished and is the subject of the present report. Four major tasks were involved in the development of Project Information Packages. They were: (1) to develop criteria for choosing operational approaches to compensatory education worthy of more widespread use and amenable to installation in other schools; (2) to design a project model and to decide, in general, what kinds of information a package should contain and what the media should be; (3) to choose up to eight compensatory education projects for packaging and develop project models for them; and (4) to prepare packages for the selected projects. (Author/JM)

ED 099457

U.S. DEPARTMENT OF HEALTH
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

RMC Report
UR-254

DEVELOPMENT OF PROJECT INFORMATION PACKAGES FOR EFFECTIVE APPROACHES IN COMPENSATORY EDUCATION

Final Report

G. Kasten Tallmadge

October 1974

Prepared for
U. S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
Office of Education/Office of Planning, Budgeting, & Evaluation

The research reported herein was performed pursuant to a contract with the Office of Education, U. S. Department of Health, Education, and Welfare. Contractors undertaking such projects under Government sponsorship are encouraged to express freely their professional judgment in the conduct of the project. Points of view or opinions stated do not, therefore, necessarily represent official Office of Education position or policy.

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UD 014 954

EXECUTIVE SUMMARY

Since the first substantial efforts in compensatory education began some 10 to 15 years ago, the federal government has spent billions of dollars for special programs to serve disadvantaged children. Unfortunately, many of these programs have failed to benefit their participants, and those which have been successful have not been widely adopted. The project described herein represents an attempt by the U. S. Office of Education to take a more active role in the national dissemination and replication of those programs which have achieved the greatest success in producing reliably measured achievement benefits in reading and mathematical skills.

With this general objective in mind, the U. S. Office of Education's Office of Planning, Budgeting, and Evaluation (OPBE) initiated a multiyear investigation of the feasibility of packaging exemplary projects in sufficient depth and detail so that the packages themselves would constitute a viable means of replicating successful practices. The first year of the total investigation was concerned with the development of packaging concepts, and the subsequent selection and packaging of six projects for field tryout purposes. This work has been accomplished and is the subject of the present report. The packages are scheduled for tryout and evaluation at from two to five sites each during the 1974-75 and 1975-76 school years.

Four major tasks were involved in the development of Project Information Packages (PIPs). They were: (a) to develop criteria for choosing operational approaches to compensatory education worthy of more widespread use and amenable to installation in other schools, (b) to design a project model and to decide, in general, what kinds of information a Project Information Package should contain and what the media should be, (c) to choose up to eight compensatory education projects for packaging and develop project models for them, and (d) to prepare Project Information Packages for the selected projects.

Criteria Development

Project selection criteria were developed jointly by the RMC project team and concerned individuals within OPBE in the four primary areas of effectiveness, cost, availability, and replicability. The latter two of these criterion areas were somewhat "soft" and judgmental. Projects were rejected on the ground of availability if they were unwilling to cooperate or if their selection would amount to a U.S.O.E. endorsement of a single publisher's or manufacturer's commercial product(s). They were rejected for replicability reasons only if they required resources not generally available in typical school districts. Examples of projects rejected on replicability grounds include a university-operated elementary school and a project requiring major architectural modifications to the typical school building.

A recurring cost amounting to $475 per pupil was eventually established as the upper limit for project selection with the additional provision that start-up costs not exceed $1,000 per pupil. One interesting fact which came to light with respect to cost was that per-pupil expenditures varied substantially as a function of the way a project was configured in a particular school district. While all six projects met the cost criteria, they could not always be set up as efficiently in the replication sites and per-pupil costs, in some instances, substantially exceeded those of the originating sites.

The effectiveness criterion had two separate aspects, statistical and educational significance. Both were cast in terms of (a) the pre- to posttest gains of project participants and (b) the gains which would have been expected had they not received the special treatment. The educational significance criterion which was agreed upon specified that observed gains had to exceed expected gains by at least one-third standard deviation with respect to the national norms. The statistical significance criterion specified that the difference between observed and expected gains had to reach or exceed the five percent confidence level using a one-tailed statistical test.

Establishing the project selection criteria was a comparatively simple task. Determining whether or not projects met them proved extremely difficult, particularly in the effectiveness area. Not one of the several hundred project evaluations which were examined provided acceptable evidence regarding project impact. Even where adequate data had been collected, analysis and reporting practices were such that no valid inferences could be drawn, and it was necessary to reanalyze raw data. This situation pointed rather clearly to the need for developing a systematic approach for validating project effects and led ultimately to the publication of a report entitled A Procedural Guide for Validating Achievement Gains in Educational Projects (Tallmadge & Horst, 1974). The heart of the report is a 23-step "decision tree" which leads the reader through a systematic consideration of factors relevant to the particular evaluation model for which validation is sought.

PIP Specifications and Model Development

Preliminary planning regarding packaging concepts for PIPs was initiated immediately upon contract award. It was not until the first exemplary project had been identified, however, that the feasibility and attractiveness of various alternative approaches could be assessed in a real-world context. The final PIP configuration was arrived at through a sort of trial-and-error process with each successive iteration representing what was felt to be a significant improvement over its predecessor. It was several months before a model design consisting of nine components was decided upon. The first four components were concerned with the planning and other pre-implementation tasks required to equip, staff, and set up a new project in a school district. These components included (a) Starter Set: Planning, (b) Project Management Directory, (c) Project Management Displays, and (d) Staff Qualifications and Preparation Set. They were primarily intended to assist the director in installing the adopted project.

The remaining five components were more specifically concerned with project implementation and were directly related to the day-to-day operation

of the project after it was installed. They included (a) Starter Set: Implementation, (b) Classroom Management Directory, (c) Student Relationships Album, (d) Professional Relationships Guide, and (e) Hardware/Software Packet.

Detailed specifications were worked out for the contents of each PIP component including format and mediation considerations. Some modifications were subsequently required to accommodate the unique characteristics of the different projects which were packaged. In most instances, however, the modifications were minor and, in no case, was it either necessary or appropriate to deviate from the basic nine-component configuration.

The specifications for the PIPs were related to packaging methods and media and reflected content considerations in only the most general terms. It was also necessary, therefore, to develop specifications for the content of each PIP based on detailed analysis of the individual projects being packaged. These specifications, called project models, described in great depth the specific topics, illustrative examples, curriculum materials, management strategies, schedules, and other items to be included in each component and subcomponent of each PIP. They, together with the packaging specifications, served as a work statement for Learning Achievement Corporation of San Jose, California, the subcontractor to RMC responsible for the actual physical packaging of the selected exemplary projects.

Exemplary Project Selection

Some 2,000 projects were considered at least superficially as potential candidates for packaging. Initial screening reduced this number to 136, and adequate information could be obtained for only 103 of these candidates. In-depth analysis led to rejection of 97 of the remaining candidates, with inadequate evidence of effectiveness accounting for 54% of them.

Although every effort was made to find more, only six projects could

be found which met all of the established selection criteria. These projects were : (a) Catch-Up, Newport Beach, California, (b) Conquest, East St. Louis, Illinois, (c) Programed Tutorial Reading, Davis County, Utah, (d) Intensive Reading Instructional Teams, Hartford, Connecticut, (e) High Intensity Tutoring, Highland Park, Michigan, and (f) R-3, San Jose, California.

PIP Development

Development of the first or prototype PIP proceeded concurrently with the packaging specification and model design tasks. This effort provided, in effect, a test bed for emerging ideas. A considerable amount of empirical tryout and revision occurred during the early months of the contract period. Four-and-one-half months after contract award, an Advisory Panel consisting of principals, teachers, and "experts" in compensatory education met along with representatives of U.S.O.E. and the National Advisory Council for the Education of Disadvantaged Children to review draft materials. Two subsequent review meetings were held two and five months later, respectively. These three meetings, which provided knowledgeable inputs representing a variety of consumer viewpoints, were extremely helpful and contributed greatly to the final PIP design.

The prototype PIP, along with the packaging specifications and project models helped to guide the development of subsequent PIPs. Although some delays were encountered which signficantly reduced the time available for planning, grants were made to 19 school districts agreeing to try out the PIPs during the 1974-75 school year. PIPs were delivered to the districts and the tryout is currently underway. Both a process and an outcome evaluation of this tryout are being directed by the Stanford Research Institute under contract with U.S.O.E.'s Office of Planning, Budgeting, and Evaluation.

ACKNOWLEDGEMENTS

So many individuals made significant contributions to the overall development of Project Information Packages that it is not possible to acknowledge them adequately here. Most obvious, of course, were the contributions of the RMC project staff: Classie Foat, Don Horst, Diane Jones, and Ann Piestrup. All showed true dedication to the tasks at hand and worked long and hard to produce the best products possible. Thanks are also due to Jack Anderson, Rudy Flothow, Jurgen Wolff and other members of the Learning Achievement Corporation staff for their thoughtful contributions and diligent efforts in designing and producing the PIP materials.

Ed Glassman of the Office of Planning, Budgeting, and Evaluation served as the U.S.O.E. Project Officer. He deserves credit for drawing up the original work statement and for working closely with the project team throughout the contract period. He was thus responsible for the basic idea behind the entire development effort as well as for many of the insights and refinements which added so much to the final results.

Our Advisory Panel included Dawn Kloften, Charlie Knight, Al Ramirez, Bettye Spann, Burley Whited, and Gail Zettel to whom we are all deeply indebted. As representatives of "the real world" they kept us in mind of the needs and concerns of those who are potential users of PIPs. Herman Ohme, a consultant to the project also provided many useful ideas relevant to the exportability of instructional innovations.

The directors of the projects we packaged--Betty Colden (High Intensity Tutoring), Fay Harbison (Project Catch-Up), Pauline Perazzo (R-3), Bettye Spann (Project Conquest), Beatrice Wood (Intensive Reading Instructional Teams), and Dallas Workman (Programed Tutorial Reading)--were all extremely helpful in working with us as was Douglas Ellson, the original developer of Programed Tutorial Reading. Without the many hours they gave

to us, there would be no PIPs.

Others from the Office of Education attended the review meetings and made valuable suggestions. Included were Duane Mattheis, John Rodriguez, Thomas Burns, Carl Wisler, Paul Miller, James Aven, Bill Lobosco, Art Sheekey, and Ann Berdek.

Finally, thanks are due to Lora Caldwell who joined the RMC staff near the end of the project when time pressures were greatest and inherited a lot of the dirty work. Her willingness and efficiency in dealing with the many tasks thrust upon her often saved the day.

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I. OVERVIEW OF THE PROJECT

The overall objective of the research and development contract described herein was to identify effective approaches for educating disadvantaged children and package them in such a way as to facilitate their adoption by schools where current practices were less successful. The first task, as described in the Work Statement prepared by the U.S. Office of Education's Office of Planning, Budgeting and Evaluation (OPBE), was "to develop criteria for choosing operational approaches to compensatory education worthy of more widespread use and amenable to installation in other schools." The criteria, furthermore, were to help accomplish this objective "with a minimum of arbitrariness."

The Request for Proposals raised a number of issues relevant to project selection criteria. These issues included the validity of various types of gain scores, the magnitude of gain required for educational significance, the chance probability level acceptable for statistical significance, the costs associated with project replication, etc.. What was not immediately clear, but became obvious upon reflection, was that the list of issues was not limited to criteria but also included procedures for determining whether or not the criteria were met.

The distinction between establishing criteria and determining whether or not they are met is an important one. The criteria themselves are arbitrary and can only be chosen, while the verification procedures must be scientifically rigorous. Thus it is appropriate to choose a chance probability level which will be accepted as adequate evidence of statistical significance but, once the selection is made, rigid procedures must be followed to determine whether the selected criterion is met.

Development of the project selection criteria began immediately upon contract award to RMC Research Corporation of Bethesda, Maryland and Los Altos, California. The initially established criteria required substantial modification during the early months of the contract period,

however, as the selection process itself revealed that many of them were unrealistic. Other changes were required as overlaps with other O.E. and H.E.W. studies came to light and whole groups of potential candidate projects had to be excluded. The final list of criteria which is presented below was far more restrictive than had been suggested by the original Work Statement and constituted one of several reasons why the search for exemplary projects became a major undertaking. The final set of criteria was as follows:

Relevance. Projects serving underachieving poor children in grades K through 12 aimed at producing cognitive achievement benefits in reading and/or math.

Availability. Ability of investigators to obtain enough information to validate the project's success and analyze it in sufficient depth.

Accessibility. Documentation of procedures, results, and costs available; personnel cooperative; can be visited for validation.

Acceptability. Conformity to Office of Education policy on dissemination; operational in public schools; not primarily a single, commercial product.

Cost. Recurring costs under $400 per pupil (subsequently modified to $475) plus start-up costs not to exceed $1,000 per pupil.

Replicability. Major components of personnel, materials, hardware, and environments can be duplicated. Development of major hardware, facilities, or training institutions not needed.

Effectiveness. At least two "instances"[1] showing evidence of educationally and statistically significant effects on achievement.

Educational significance. Achievement gains at least one-third of a standard deviation greater than expectations based on national norms or control group scores.

1. An instance, here, may be defined as a single-group evaluation. More than one such instance must have shown positive results before a project would be considered.

Statistical significance. No more than one chance in 20 ($p \leq .05$) that the observed gains could be due to chance.

Support by U.S.O.E. funds. The project must be, or previously have been, the recipient of funds from U.S.O.E. through E.S.E.A. Title I, Title III, Right-to-Read or other program.

Conformance with federal regulations. Operation of the project must be in conformance with the pertinent program regulations and performance criteria.

Assuming that a sufficient number of projects could be found which met all of the above criteria, consideration would also be given to:

Variety. Difference in instructional strategy, breadth of target population served, subject matter focus, etc..

Finally, Bilingual programs, Follow Through programs, and programs sponsored by the Bureau of Indian Affairs were specifically excluded from the study.

In most cases it was a relatively straightforward matter to determine whether or not these criteria were met, although convenient information sources were often not available. Cost and effectiveness were exceptions and proved difficult to deal with.

The cost problems were threefold: first, cost accounting practices at the project level are often inadequate and highly individualistic; second, alternative configurations of some projects could result in widely differing per-pupil expenditures; and third, regional differences in salary scales and other resource costs constitute a major source of variation. Because the cost criterion was not considered of major importance (as long as costs were "reasonable" and within the limits set by the criterion), there was not a great deal of time and effort spent refining cost estimates. What were felt to be reasonable approximations were used for selection purposes, although more detailed cost analyses were undertaken in order to estimate replication costs for those projects which were ultimately selected.

Effectiveness considerations were given much more careful attention,

as endorsement of an unsuccessful project would have defeated the entire purpose of the research and development effort. It became clear at the very outset of the study, however, that this kind of error would be very easy to make unless great care were exercised in the selection process.

The "validation" of project effectiveness had necessarily to depend on existing evaluation data as the work schedule and budget did not permit any firsthand testing. Preliminary review of available evaluation reports quickly revealed that designs were tremendously varied, that many serious errors had been made in implementation, and that plausible alternative hypotheses regarding obtained results were inadequately considered. It was clear that a systematic validation procedure was needed to facilitate the review and selection process.

The classic work of Campbell and Stanley (1963) provided much of the informational input used in developing the validation procedure. These authors, however, did not consider norm-referenced evaluation models--models which today are far more widely used than any others.

The most commonly encountered norm-referenced evaluations make use of grade-equivalent scores and typically express results in terms of months of grade-equivalent gain per month of project participation. Other norm-referenced evaluations make use of percentiles, deciles, or quartiles and assess project impact in terms of shifts from pre- to posttest. No serious and thorough analysis of these models and the pitfalls associated with their use could be found, and it was thus necessary to investigate these issues before the validation procedure could be completed. Again, this methodological task, while essential to successful execution of the contract effort, was largely unanticipated in the Work Statement.

Many serious pitfalls were found to be associated with the use of norm-referenced evaluation models. Furthermore, the use of grade-equivalent scores in conjunction with <u>any</u> type of evaluation was found virtually to preclude the drawing of valid inferences regarding project success. These findings, combined with the twelve "factors jeopardizing the internal and external validity of experiments" discussed by Campbell and Stanley (1963), were arranged in decision-tree format to provide the needed procedural guide for validating project effectiveness (Tallmadge & Horst, 1974).

Concurrently with the development of project selection criteria and validation procedures, the search for successful projects was initiated. Several lists of projects which one study or another had labeled as exemplary were provided by the U.S.O.E. Project Officer. The expectation, however, was that one list of 23 projects which had been assembled from other sources based on what was judged to be particularly convincing evidence would provide up to eight projects which would stand up under the scrutiny of the validation procedure. This expectation, too, proved unfounded.

Examination of all of the projects on all of the lists did not produce eight which met the established criteria. Additional nominations were obtained from State Departments of Education, from U.S.O.E. program offices, from consultants who participated in other phases of the study, and through personal professional contacts of members of the RMC staff. After seven months, further searching was abandoned. Only the six projects listed below could be found which satisfied the selection criteria.

1. Project Catch-Up, Newport Beach, California.
   Reading and math, grades K-6
2. Project Conquest, East St. Louis, Illinois.
   Reading, grades 1 (repeaters)-6
3. Programed Tutorial Reading, Davis County, Utah.
   Reading, grade 1
4. Intensive Reading Instructional Teams, Hartford, Connecticut. Reading, grade 3
5. High Intensity Tutoring, Highland Park, Michigan.
   Reading and math, grades 6 and 7
6. Project R-3, San Jose, California
   Reading and math, grades 7-9

Some 2,000 projects had been considered at least superficially, 136 appeared to be possible candidates at some point during the screening process, and 103 were reviewed in depth. The extent of the searching and selection task far exceeded what had been planned. Additional details are provided elsewhere in this report and in Foat (1974).

Some preliminary planning regarding packaging concepts was also initiated very early in the study. This effort began in earnest, however, as soon as the first exemplary project was identified. Considering the specific information potential adopters would need to have in order to replicate key project features proved to be a particularly fruitful way to proceed.

The development of packaging concepts and the first Project Information Package proceeded simultaneously, undergoing many iterations as new ideas emerged or old ones proved unsatisfactory. Approximately four and one-half months after work on the contract began, an External Advisory Panel was convened to review and evaluate packaging concepts and draft materials. Representatives from several groups in O.E. and the National Advisory Council on the Education of Disadvantaged Children were also in attendance.

The two-day meeting produced many useful ideas and led finally to the specification of the components and subcomponents which the Project Information Packages (PIPs) would contain as well as the manner in which they would be mediated. These specifications were called the Model Design. Ideas were also obtained for an Analysis and Selection Kit which would enable potential replicators to match the needs of their schools with the characteristics of the packaged projects.

The actual packaging of the PIPs was done by Learning Achievement Corporation of San Jose, California under subcontract. Because of this arrangement, it was necessary to prepare detailed specifications for each of the projects selected for packaging. These specifications, called Project Models, were organized in accordance with the Model Design referred to above but included detailed information about the content, emphasis, and method of presentation to be reflected in the final PIP components and subcomponents. While the first two PIPs were developed without formal Project Models, such models were prepared and used for the four remaining projects. Further information about the Model Design and Project Models is given later in this report and in Piestrup (1974).

The PIPs themselves are comprised of nine components, four for

planning and five for implementing each project. The components include:

1. Starter Set: Planning. Provides orientation to project, public relations material, and introduction to the package for the project director. Also provides information for school boards, principals, regular school staff, potential school staff, and parents, in order to inform and elicit support. It includes a filmstrip with cassette tape, handout brochure, project director's orientation booklet (with cassette tape for some projects), and viewfoils.

2. Project Management Directory. Provides detailed guidelines and support materials needed to plan and implement the project for project management personnel. It includes a Project Management Calendar and supplementary sections on the major management tasks.

3. Project Management Displays. Provides time schedule overview, summarizes component use, and displays component use and time schedule to visitors. It includes a Major Management Tasks Chart, and Project Information Package Use displays.

4. Staff Qualifications and Preparation Set. Provides personnel selection guidelines for director and self-evaluation and self-training materials for the staff. It includes a Staff Qualifications Checklist and In-service Training Topics.

5. Starter Set: Implementation. Helps classroom personnel in starting each type of activity (testing, teaching, other) including setting up environment for the first time. It includes Implementation Starter Booklet and Original Art File.

6. Classroom Management Directory. Provides detailed guidelines for all classroom procedures and samples of materials needed for administration of the project such as forms, notices, and letters for project classroom personnel. It includes Teaching Staff Guide (e.g., a calendar and support materials).

7. Student Relationships Album. For the project staff interacting with children, this album conveys the project environment, from

the child's viewpoint, which staff is expected to create, e.g., how he should perceive staff, what learning climate he should experience (high pressure, self-directed, etc.). It also distinguishes roles of different staff members in creating the environment and describes desired student responses (e.g., confident, competent, happy, eager) and gives specific instances.

8. Professional Relationships Guide. Defines for all project staff (plus the school principal) their roles in relation to all school staff (project and non-project) with whom each project staff member interacts. It also attempts to anticipate and reduce staff conflicts.

9. Hardware/Software Packet. Aids project director and teaching staff in selection and ordering of commercial hardware/software and describes (including sources and features) core and supplementary items. Conveys to the teaching staff the experience of original project staff plus modifications made (if any). It includes Factsheets and manufacturers' brochures for core items selected by project staff and a supplementary materials list with publishers' addresses, available Factsheets, and brochures.

Each PIP is undergoing extensive demonstration and testing at from two to five sites during the 1974-75 and 1975-76 school years. Results of the demonstration, based on intensive monitoring and evaluation, will be used to revise the PIPs.

II. ESTABLISHMENT OF PROJECT SELECTION CRITERIA AND VALIDATION PROCEDURES

The following pages deal in some depth with the criterion areas of availability, cost, replicability, and effectiveness (statistical significance and educational significance). Other equally relevant criteria were enumerated on pages two and three of the preceding chapter. Since these criteria are self-explanatory, however, they are not discussed further here.

All of the project selection criteria were directly related to the issue of whether projects, when replicated at new sites, were likely to be cost-effective means of helping children learn basic skills. Process criteria other than those required by D.H.E.W. regulations and policy were specifically excluded from consideration. In particular, a project was given no preference because of good evaluation design or systematic development procedures, although these factors substantially facilitate project validation and might contribute to Project Information Package development. Neither did a project receive preference for meeting its own stated objectives unless, of course, these objectives included achievement benefits in reading or math. In short, projects were judged on results, not on how closely they followed currently endorsed development procedures.

The process of selecting and validating projects was iterative in nature, with each criterion area examined at several preliminary levels before analysis was undertaken to the depth which was ultimately required. As soon as it became clear that a project failed to meet one of the criteria, it was excluded from further consideration. While this approach precluded a detailed analysis of deficiencies (since multiple deficiencies would not then normally be detected), the economies it afforded were absolutely essential to completing the task in a reasonable amount of time.

The most technically difficult problems to be dealt with arose in

the effectiveness area, for which a 23-step "decision tree" was developed to structure the validation process. The decision tree was designed to reflect the "factors jeopardizing the internal and external validity of experiments" enumerated by Campbell and Stanley (1963) as they related to the types of evaluation studies encountered. It also reflected other important considerations, such as the type of scores on which statistical operations were performed (raw, standard, scale, percentile, grade-equivalent), whether comparisons were made against control groups or were norm-referenced, and the basis on which experimental-control (or norm group) comparisons were made (posttest scores, gain scores, covariance analysis, etc.).

The process of validating a project typically began with an incomplete collection of reports, data, and promotional literature received in response to a written or telephoned request. Winnowing this information, identifying and obtaining needed supplementary data, and weighing the resulting evidence was a complex task. It required a substantial investment of effort, including mail and telephone communication with project personnel followed by on-site visits. Because this process was not feasible for all of the projects which were nominated as candidates for packaging, some preliminary screening was required. Projects which passed the preliminary screening criteria under each heading were considered "possible" candidates for validation and all criterion areas were then systematically investigated in greater depth. Projects which failed to meet any of the preliminary criteria were not rejected immediately, but attention was focused on the specific criterion in question so that definitely unsuitable projects could be identified and rejected with a minimum of superfluous effort. Brief discussions of each of the criterion areas follows.

Availability

Availability, in the broad sense, may be construed to encompass all factors relating to the ability of the adopting school to obtain all components required to replicate an effective project. For the purpose of identifying exemplary projects, however, a separate criterion area

labeled "Replicability" was also established. Thus the connotation of availability, as used here, is limited to the two specific categories of accessibility and acceptability.

Accessibility was construed to reflect considerations of whether a project existed in a form that could be visited for the purpose of validation, whether the responsible program personnel were willing to cooperate to the extent necessary for the development of a replication package, and whether documentation of procedures, results, and costs were available. All projects were considered to pass initial screening on accessibility unless there was clear evidence that one or more of these considerations was not met.

Acceptability was taken to mean the conformity of the project to Office of Education policy on dissemination. It was assumed for purposes of initial screening that projects which were operational in public school districts met Office of Education dissemination criteria unless they consisted primarily of a single commercial product. Such single commercial products were not considered for validation.

All of the above criteria were considered iteratively as the validation process progressed. Obtaining access to project sites and project information was an integral part of the validation process. Promising projects were not eliminated on the basis of accessibility, however, until all reasonable approaches to pursuing validation attempts had been made.

The validation of project acceptability consisted of identifying and documenting project content and components, and submitting these descriptions to the Office of Education for approval by the Dissemination Review Panel.

Cost

Educational cost accounting is a complex process, and it is frequently difficult to isolate the costs of an experimental project. It is even more difficult to summarize cost figures in a way that will be meaningful to schools in other regions, because (a) schools start with different

existing resources, so that a given component of a project may involve special expenditures in one district while the same component may be available at no cost in a second district, (b) the methods and costs of providing prerequisites for success (e.g., adequate nutrition, discipline) depend heavily on pre-existing local conditions, (c) the costs of specific items including personnel, materials, equipment, facilities, etc., vary from region to region, (d) both total and per-pupil costs may vary widely as a function of the number of pupils served and the efficiency of the particular project configuration in a particular setting, and (e) accounting procedures and systems differ widely.

In evaluating potentially useful projects, the major cost consideration for most school districts is the additional funding that will be required in order to install and operate a program. For the reasons cited above, certain assumptions had to be made before any reasonable estimate of these costs could be obtained. The most significant of these assumptions was that adequate facilities to house the project could be made available at no cost to the project. If, for example, it became necessary to purchase a portable classroom, such costs would almost certainly exceed any reasonable selection criterion which could be established. Another significant decision was that projects would be "costed" in an efficient configuration regardless of the manner in which they were being implemented at the originating site. Finally, since whatever cost criterion would be agreed upon would be highly arbitrary, a decision was made to use local cost data without attempting to adjust for regional differences in salary or other costs.

Based on these assumptions, projects which required yearly expenditures of over $400 per pupil or an initial investment of more than $1,000 per participating pupil would be rejected. The former figure was subsequently modified upward to $475 per pupil.

Judging from cost figures reported by a wide range of Title I and Title III projects, these costs would not be prohibitive in school districts receiving federal funds for compensatory education. It would remain, of course, for each adopting school independently to evaluate the

feasibility of a given project and to determine a realistic cost estimate with the help of a needs and resources assessment.

Replicability

Many of the obstacles to replicating a project were considered under the headings of Cost and Availability above. This section deals with two remaining categories of replicability considerations. One is the extent to which the basic model for a project lends itself to packaging or reproducing the individual components of the model for a reasonably wide range of potential project users.

Ease of packaging is primarily a function of the degree of structure in a project and the comprehensiveness of its documentation. Highly structured projects in which the learning process is controlled largely by printed materials or mechanical devices are relatively easy to model, whereas, in projects which give teachers a major role in directing learning, it may be difficult to isolate the essential components. In either case, projects which have concerned themselves with dissemination may have already made substantial progress toward developing Project Information Package content.

Ease of implementation is affected by both the unfamiliarity and the complexity of teaching methodology, management, scheduling, and data processing components of the system. Projects which require school personnel to understand and apply new principles impose special selection and/or training requirements. Additional problems are inherent in projects which involve the family, the community, or other groups outside the direct control of the school.

The second category of replicability considerations is comprised of problems in duplicating essential components of the educational project. All components including personnel, materials, machinery, and the general environment must be referenced. The only issue considered here was whether each component would be available to a prospective user, presumably without the development of major manufacturing or training institutions.

For purposes of initial screening, all operating projects were considered replicable unless a major component could not be readily duplicated. While specialized materials or facilities and expensive or out-of-production hardware were obvious problems, special attention had also to be paid to unusual qualities (e.g., charismatic leadership) or qualifications required of personnel, and to unique environments (e.g., university settings) that could not be obtained or constructed by a school district.

In the final analysis, decisions as to whether or not a project was adequately replicable might have rested on highly subjective judgments. Only a few projects were rejected on the basis of replicability considerations, however, and these few cases seemed clear cut.

Effectiveness

Assessing the effectiveness of an educational project presents an intrinsically difficult problem. The evaluator faces many pitfalls which may be broadly grouped into the three categories of measurement, experimental design, and statistics. Hazards exist in each of these areas which may completely invalidate any inferences he might draw about project impact.

Conventions for experimental design and associated statistics have been developed to deal effectively with evaluation problems in controlled experimental settings. Standard reference books describing these conventions are widely available (e.g., Winer, 1971) and are well known to most evaluation specialists. Unfortunately, in the real world of education it is often impossible to employ rigorous techniques, and it is extremely rare to find a compensatory education project which satisfies all, or even most of the fundamental principles of good research design. The problem is so widespread, in fact, that if one were to reject all projects with less-than-ideal evaluations, the possibility of finding even a few exemplary projects would be extremely remote.

Many of the weaker designs have been discussed at length by Campbell and Stanley (1963) along with the "threats to internal and external validity" associated with each. These authors, however, have hardly touched upon the related problems of educational measurement. Scoring, scaling, and norming considerations become particularly important in those designs which employ non-comparable comparison groups or no comparison group at all.

The extent and complexity of the experimental and measurement problems made it clear that a systematic procedure was sorely needed for reviewing project evaluations, for identifying and assessing the impact of their shortcomings, and for making reasonable judgments regarding project effectiveness while carefully weighing all relevant factors. To meet this need, a 23-step decision tree was developed. The decision tree was designed to insure examination of each of the 12 threats to valid inference discussed by Campbell and Stanley (1963) as they relate to specific evaluation designs. It also encompasses other important considerations such as the type of scores on which statistical operations are performed (raw, standard, scale, percentile, grade-equivalent), whether comparisons are made against control groups or are norm-referenced, and the bases on which experimental-control (or norm group) comparisons are made (posttest scores, gain scores, covariance analysis, etc.).

A procedure of this type cannot, of course, be applied in a vacuum. It must be tied to pre-established criteria to which each judgment can be related. These criteria include (a) the minimum increment of cognitive benefit which will be considered educationally significant and (b) the minimum non-chance probability level which will be accepted as statistically significant.

It should be pointed out that the establishment of criteria for educational and even statistical significance is a matter of policy decision-making and has only tenuous ties to "science." There are associated measurement problems, however, which represent scientific challenges of a non-trivial nature. Most educators, for example, will

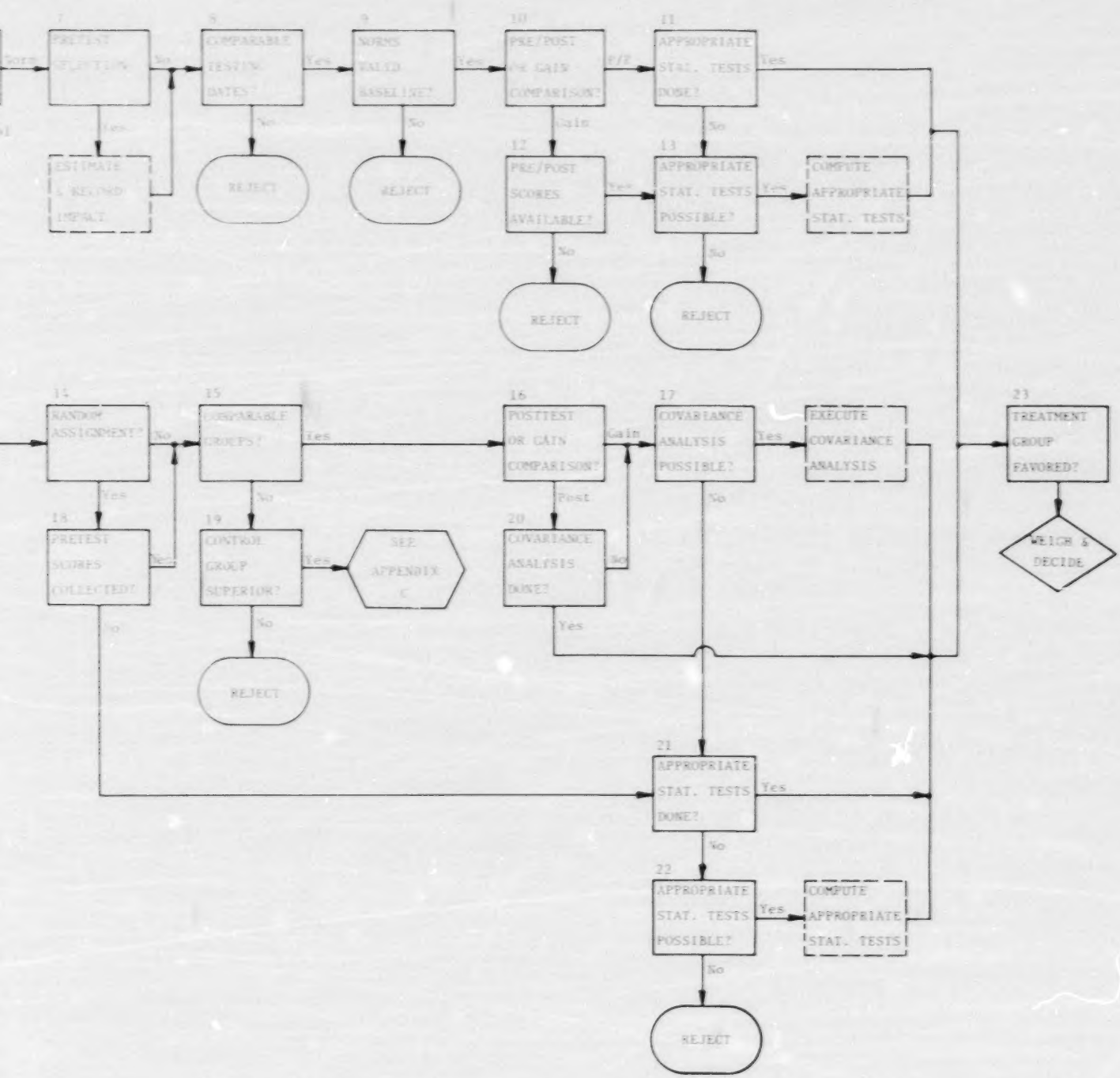
agree that the goal of compensatory education is to raise the achievement levels of disadvantaged children from some starting point to an end point which is closer to the national norm. The questions, "How much closer?" must be answered by the policy makers. Once this criterion has been agreed upon, however, the problem of how to measure the improvement must be resolved.

Clearly, the only fair measure of an "educationally significant gain" would be one which was independent of the pre-treatment achievement status of the project participants. In other words, a project serving severely disadvantaged children should have just as good a chance of being judged successful as one serving children closer to the national norm. To achieve this goal, the criterion of success must be defined in terms of an equal-interval scale with some sort of anchor point. Normalized standard scores referenced to a national average appeared to offer the most appropriate medium in which such a criterion can be cast since using unstandardized and/or criterion-referenced tests would require that success be defined in some other manner, and there could then be no assurance of equitability over the entire range of initial disadvantagement.

These conditions led the research team to advocate a definition of educational significance which was expressed in terms of standard score gains referenced to the national norm. A gain of one-third standard deviation was subsequently agreed upon with O.P.B.E. as the criterion to be used for determining exemplary status. Under these conditions, for a project to be considered for packaging, the mean posttest standard score of project participants had to be one-third standard deviation higher with respect to the national norm than the mean pretest score of the same children. The criterion adopted for statistical significance was the five percent confidence level.

As mentioned earlier, a 23-step decision tree was developed to provide a systematic validation procedure for determining whether projects met the established effectiveness criteria. The tree itself is shown in Figure 1. The report in which it was originally presented

Fig. 1. Decision tree for validating statistical significance.


7
PRETEST EQUIVALENCE?
No
Yes
ESTIMATE & REMOVE IMPACT
8
COMPARABLE TESTING DATES?
Yes
No
REJECT
9
SCORES VALID BASELINE?
Yes
No
REJECT
10
PRE/POST OR GAIN COMPARISON?
P/P
Gain
11
APPROPRIATE STAT. TESTS DONE?
Yes
No
12
PRE/POST SCORES AVAILABLE?
Yes
No
REJECT
13
APPROPRIATE STAT. TESTS POSSIBLE?
Yes
No
REJECT
COMPUTE APPROPRIATE STAT. TESTS
14
RANDOM ASSIGNMENT?
No
Yes
18
PRETEST SCORES COLLECTED?
No
Yes
15
COMPARABLE GROUPS?
Yes
No
19
CONTROL GROUP SUPERIOR?
Yes
No
REJECT
SEE APPENDIX C
16
POSTTEST OR GAIN COMPARISON?
Gain
Post
20
COVARIANCE ANALYSIS DONE?
No
Yes
17
COVARIANCE ANALYSIS POSSIBLE?
Yes
No
EXECUTE COVARIANCE ANALYSIS
21
APPROPRIATE STAT. TESTS DONE?
Yes
No
22
APPROPRIATE STAT. TESTS POSSIBLE?
Yes
No
REJECT
COMPUTE APPROPRIATE STAT. TESTS
23
TREATMENT GROUP FAVORED?
WEIGH & DECIDE

(Tallmadge and Horst, 1974) also contains in-depth discussions of each step as well as technical appendices covering additional relevant details. Many, if not most of the steps in the decision tree explicity call for judgments from the evaluator. At each step it is assumed that the evaluator is thoroughly familiar with the issues involved and is qualified to make a judgment based on complex technical considerations.

The particular path to be followed through the decision tree depends, of course, on the specific design employed in the evaluation study under consideration, but each path is structured so as to focus attention on the design, analysis, and interpretation pitfalls likely to be encountered using that model. Unless a project has been evaluated in several different ways, substantially fewer steps will be required than the 23 which comprise the entire decision tree.

III. IDENTIFICATION OF EXEMPLARY PROJECTS

Originally, it was not the intent of this study to undertake a wide-scale search for successful projects similar to that which characterized several recent research efforts sponsored by U.S.O.E. (e.g., Wargo, Campeau, Tallmadge, 1971). Candidate approaches were to be selected from among those identified as exemplary by other investigators. An initial list of twenty-three promising approaches was provided by the U. S. Office of Education at the onset of the project. It was assumed then that most, if not all of the projects to be packaged would come from that list. Unfortunately, only three met the established criteria, and the search had to be extended to include other lists of exemplary project nominees from state- and federal-level agencies, projects included in the 1971 and 1972 Ed Fairs, and projects identified through personal professional contacts. It is estimated that, prior to the selection of the final six projects, the original list of twenty-three grew to well over 2,000 projects.

The initial screening process began with a weighing of each candidate project against the prerequisite criteria of grade level, content area, target population, and number of evaluation "instances." Briefly, a project was considered a "possible" candidate for packaging if (a) its approach was aimed at producing reading or math benefits, (b) if its approach was used with "target" children (as defined within the guidelines of Title I) in grades K through 12, and (c) if the approach was evaluated more than once. In most cases, information from the original nomination source centered around content area and grade-level information, with brief project descriptions and one- or two-line statements of the evidence of success and availability. Projects which clearly did not appear to meet the prerequisite criteria were eliminated from further consideration. Occasionally, enough information was available

at this juncture to eliminate projects for other reasons as well. Some, for example, were easily recognizable as single commercial products and others were clearly not U.S.O.E.-funded. Of the approximately 2,000 approaches reviewed, 136 remained in the study after this initial screening and were considered viable candidates for packaging.

Contacts were initiated with all of the 136 candidate projects either by mail or telephone in order to request additional information. Follow-up contacts were made to those projects which failed to respond initially. Useful information was received from 103 of the projects contacted. Four other projects also responded but only to indicate that they had been, or were about to be terminated or that no project information was available. No responses were obtained from the remaining twenty-nine projects, although four of these had indicated that information would be forwarded.

As promotional literature, descriptive information, and/or evaluation reports were collected, each of the remaining 103 projects was reviewed by one or more members of the research staff. The initial review entailed reading the evaluative and descriptive literature and noting which of the established selection criteria appeared to have been met and which were not met by the project. Often it became clear at this point that projects were not suitable for packaging.

Projects which survived the initial screening were subjected to a further in-depth review and analysis. Unfortunately, the information available on projects was typically inadequate and inconclusive. It was often possible to reject projects with a high degree of confidence, but those not rejected could only be categorized as "likely" or "low priority" (unlikely).

Projects which were considered "low priority" were those which appeared to meet the preliminary screening criteria but which presented one or more evaluation or packaging problems. In many instances, data were inconclusive, not particularly promising, and would have required massive reworking before valid inferences could be drawn. Other projects

were placed in the low priority category because charismatic leadership appeared to be essential to their success, because the economic interests of project developers were threatened by the type of packaging to be undertaken, or because the nature of the project suggested the need for excessively expensive packaging techniques or media. Each low priority project was reviewed in considerable depth by the research staff, and every effort was made to retain as many projects as possible.

Efforts to obtain additional information were initially focused on the apparently most promising of the projects, and new information was reviewed as quickly as it was received. Unfortunately, it was never possible to accept the evaluation results for any project at face value. The main source of difficulty was the almost universal use of grade-equivalent scores and grade-equivalent gains, but other problems such as scoring irregularities were also encountered. Before any project could be accepted as successful it was necessary to obtain the raw test scores and to conduct appropriate analyses on them. The amount of reanalysis required was still another factor which original planning for this study had grossly underestimated.

Eventually, all projects in the "likely" and "low priority" categories were examined in depth. Surprisingly, only six projects were found which met the established criteria. Original plans called for the packaging of eight exemplary projects. There was thus a significant reduction in the scope of the packaging effort itself which served to offset the greatly expanded effort that had been required by earlier contract tasks.

In all, project selection was a continuous activity throughout the first eight months of the contract period. The initial selection, Project Catch-Up, was chosen during the third contract month. High Intensity Tutoring, Project Conquest, and Programed Tutorial Reading were selected during the fifth contract month. Project R-3 and Intensive Reading Instructional Teams were selected during the seventh and eight contract months, respectively. Each of these projects was written up for, and approved by, the U.S.O.E. Dissemination Review Panel before the end of the ninth contract month.

Information about the 103 projects which were seriously considered

as candidates for packaging, and the reasons why they were rejected, has been provided by Foat (1974). Table I summarizes the frequency of rejections for each of the established criteria. In examining Table I, it should be remembered that rejected projects were examined only until a reason was found for rejecting them. Individual projects might have failed to meet several criteria, but no attempt was made to look for multiple deficiencies. The summary data, for this reason, do not necessarily reflect the frequency with which specific deficiencies exist. What they reflect is solely the frequency of occurrence of "first-noticed" deficiencies.

As indicated in Table I, over half of the candidates for this study were rejected for failure to meet the effectiveness criterion. This reason for rejection must not be taken as an indication that the projects were unsuccessful--or even that they failed to produce cognitive achievement benefits. As is stated in the Tallmadge and Horst (1974) report, "What is rejected is not the project but the evaluation data which, if the decision-tree process has been carefully followed, have been shown to be inadequate as a basis for reaching any conclusion regarding project effectiveness [p. 11]."

TABLE 1

Summary of Reasons Projects Were Rejected

Reason for Rejection	Frequency	Percentage
Effectiveness	52	54%
Relevance	17	18%
Availability	11	11%
Bilingual	8	8%
Replicability	2	2%
Conformance to Guidelines	2	2%
Cost	2	2%
U.S.O.E. Support	2	2%
Follow Through	1	1%
Total	97	100%

IV. DESIGN OF PROJECT INFORMATION PACKAGES

Neither the replication of exemplary compensatory education projects nor the packaging of descriptive information about such projects was a new idea at the time the work described herein was begun. What was new was the concept of designing a package so that it would itself constitute a viable and at least nearly sufficient mechanism for project replication. In essence, what was desired was a comprehensive "blueprint" which would enable an adopting site to replicate at least the essential features of a demonstrably successful project with sufficient fidelity to ensure a high probability of success in the new setting--and with a minimum of technical assistance.

The developers were aware that earlier attempts to bring about the replication of effective educational practices had been only marginally successful. Among the reasons for this disappointing state of affairs are the following:

1. Descriptive data of the type usually generated for successful or promising projects are not packaged effectively; most frequently there is a demand for a good deal of dedicated reading on the part of the potential program adopter. Furthermore, the material does not guide the adopter through the day-by-day problems and objectives of the successful project.

2. When the printed materials are edited down, and even when they are combined with visual aids, they do not communicate the real impact and the presence of the successful or model projects.

3. Prospective project adopters are basically most interested in procuring for their schools the critical two or three elements of a model project that account for most of the model's success. But they are most often presented with a shopping list that suggests neither priority nor ranking for the listed items.

4. Adoption techniques are not usually identified. If a teacher or administrator shows interest in replicating a program, he is given elements of the project without instructions for re-applying those elements to a new setting.

The avoidance of these pitfalls became one of the major considerations in conceptualizing Project Information Packages.

It was felt that a major improvement over previous attempts would result from the integration of management functions with the instructional paradigms of the projects selected for replication. This approach would contrast markedly with the standard approach which simply described an operating program without consideration of what must be done and by whom in order to install and maintain the project.

Consistent with this "how-to-do-it" orientation, it seemed appropriate to try to arrange the materials in some sort of time-based sequence. While the complexity of the projects, and the number of different persons involved in their installation and operation precluded organization based entirely on time phasing, it was at least possible to group the components into planning and implementation groups. As far as possible, components within groups and materials within components were also arranged according to the sequence in which they would be used in the replication process.

These decisions were arrived at early in the contract period. It was not long thereafter when the general configuration of PIP components began to take shape. The number, nature, and content of the components changed more or less continuously, however, as development of the first PIP progressed. Concepts which sounded good in theory simply could not be implemented satisfactorily, and new ideas emerged to replace them. What is described below is the end result of what was really an empirical tryout and revision process.

Planning Components

The projects selected for packaging had typically operated for several years and had undergone a variety of evolutionary changes. In

all cases, it was clear that the original start-up procedures would be less than optimum replication strategies--in some instances, dramatically so. But devising strategies for installing full-blown projects and getting them to operate smoothly the first year posed severe problems as well. It was necessary to invent a planning phase, scheduling events by means of logical inference from known end points. For example, to have personnel, instructional materials, and space available for a laboratory in September, it could be inferred that the activities of hiring teachers and aides, ordering equipment and supplies, and arranging for space with a principal must begin some months in advance of September. These events had further implications. If equipment is ordered, there must be a place to have it delivered; if space is needed in a school, the principal must determine how and where to provide it; if the regular school staff is to be involved, their concurrence and that of the principal must be obtained; and so on. Thus, events had to be identified and a schedule worked out which would be consistent with task interdependencies, lead-time requirements, and desired (or required) completion times.

One of the first decisions in developing the PIP design was that key events, particularly for the planning phase of the project, should be scheduled in a calendar format. The concept was to list tasks in the calendar which were to be accomplished as close to <u>when</u> they were scheduled as possible. <u>How</u> they were done was to be left variable. Support documents with descriptions of how the original project accomplished the task, internal memos that showed the style of management, alternatives for dealing with difficulties, and other practical suggestions were to be referenced in the calendar. Events were to be blocked by weeks so the director could fill in the actual event, such as a meeting with his or her principal, on the day it was to occur. The directory was also to summarize the tasks for each month in a checklist format to emphasize the importance of accomplishing them as nearly as possible to the scheduled time. The directory was also to provide budget updating summaries for the director to fill in each month. This key component was named the <u>Project</u>

Management Directory (PIP Component #2).

The first few weeks of the replication process pose special problems in the area of orientation and public relations. A Starter Set: Planning (PIP Component #1) was therefore called for to give the new project director multi-media materials to use in presenting the project and in gaining the support of parents, teachers, principals, and school boards. The purpose of the Starter Set is to explain the key features of the project briefly for a general audience, and in some depth for the project director so that he or she would be able to conduct subsequent briefings and answer questions on the project.

Brief one-page handouts and illustrated brochures were also specified for the project director to use in public relations as part of the Starter Set: Planning. In the course of the project, the director and staff would probably develop their own brochures and notices to send home but, again, the PIP model was designed to accelerate the start-up process by calling for materials the new staff would need in a format designed for immediate use.

Project Management Displays (PIP Component #3) were also called for in the model design to serve a public relations and information function. They were to be designed to attract attention to the existence of the project and to elicit questions or interest concerning it. They also were to summarize the key tasks to be performed and the components to be used in performing them.

Specifications for a final planning component, the Staff Qualifications and Preparation Set (PIP Component #4) were drawn up to assist project directors in hiring the kinds of personnel needed to implement specific projects and in providing training and training mechanisms for project teachers and aides. Because major differences were found between projects with respect to the relative emphasis placed on hiring as opposed to training (the more highly structured projects tended to rely on the hiring of existing expertise), two separate sub-components were called for--one relevant to selection and one to training. The PIP model design specification which was eventually prepared suggested that the two sub-components

should be equally detailed.

In the training area, the model design did not call for the development and/or mediation of actual instructional materials. Rather, it specified that training programs be defined. The assumption was that project directors would possess, could acquire, or could hire outside experts to provide the required subject-matter expertise.

These four components were designed to provide all that would be needed to plan a project from the time a district decided to adopt it until it began to operate in the schools. Most of the operational directions were to be contained in the Project Management Directory, but other components were to provide further information and mediation of the project designed to facilitate smooth and efficient introduction of the project into replicating districts.

Implementation Components

Project implementation components are those related to instruction, including teacher orientation, classroom management, working with professional associates, and the purchasing of materials for instruction. First, it was decided that the teachers and aides should be provided with an introductory component analogous to the Starter Set for the project director. The design assumed, however, that teachers would have been briefed on the project at the time they were hired and would have gone through in-service training before using the Starter Set: Implementation (PIP Component #5). This component was created to provide extra help in the early weeks of instruction in the new project. The design called for materials for decorating the classroom, a detailed calendar for the first two weeks of school, and descriptions of how to begin each new activity, whether it was testing or using special equipment.

Specifications for this component changed considerably during the development process. At first, the intent was to provide a detailed lesson plan for the first few hours or days of instruction. It was later learned, however, that most projects selected for packaging were unlike traditional classrooms where teachers would face thirty new faces

the day after Labor Day. Working groups were typically small, the first few weeks were generally devoted to testing, and neither teachers nor children were faced with an abrupt beginning or all-day large-group interaction.

Despite these mitigating factors, it did seem important to provide information and some materials on duplicating whatever environmental conditions the project director considered essential for motivating children from the start. Again, the essential idea was to enable new staff to create an attractive environment appropriate for the region where the project was to be replicated, not to package the particular bulletin boards or decorations used at the originating site. This component was intended to provide a place for including some actual materials for teachers to use, but these materials were to be modified so as to be useful in a variety of contexts other than the one for which they were originally designed. It was also to draw from the ideas of originating teachers on how to make devices useful in the laboratory setting e.g., how to make study carrels, how to make bright, round tables out of old desks, and the like. The idea was not only to share these ideas but also to encourage new teachers to approach the project with inventiveness and commitment similar to that of the originating teachers.

The Classroom Management Directory (PIP Component #6) was designed to correspond to the director's calendar in format and purpose, but with a day-by-day emphasis on guidance and format. Calendar entries were to indicate the sequence of events and to remind teachers to perform key tasks throughout the year. Some tasks, such as scheduling time for children to be released by regular teachers, were continuous over several days or weeks. Others, such as pretesting, needed to be performed on a certain day. The Classroom Management Directory was also supposed to include monthly task summaries in a checklist format, budget records, and supplementary sections explaining alternative strategies for accomplishing tasks and anticipating problems. The practical details of operating an instructional system were to be described in this component, with

information drawn from the people who successfully taught in the original project.

The components described thus far have dealt with how the program should be set up and operated. It was also considered extremely important to describe the project from the child's viewpoint, and the Student Relationships Album (PIP Component #7) was designed to fill this need. The roles of each staff member in relation to the child were to be included on information sheets. In addition, space was to be provided for recording information on new products along with a list of publishers of educational materials.

Project Models

Once the overall configuration for the PIPs had been finalized and the characteristics of each component defined, the next step in the development process was the preparation of detailed models for each of the projects to be packaged. These models were carefully detailed documents which described the exact content, the method of presentation, and the form of mediation for each component and subcomponent of each PIP. All models were developed in accordance with the basic PIP model design and thus bore at least superficial resemblance to one another. The similarity, however, did not extend beyond organization and format. The content of the models differed greatly and reflected, of course, the differences which existed among the projects selected for packaging.

It was even necessary, in some instances, to deviate somewhat from the model design. In one model, for example, the role of the school principal was critical while the roles of the actual instructional personnel were entirely "programed". There was no need for a Classroom Management Directory (Component #6) whatsoever, and it was replaced with a Principal's Management Directory which was quite different in content and format from the specifications of the model design. This same model also called for the inclusion of some self-instructional training materials in the Student Relationships Album--another departure from the model design.

The development of models for specific projects involved a great

deal of information gathering. All available documentation was reviewed and, once projects were finally selected, site visits were conducted. Four to six man-days were typically devoted to site visits although two projects involved substantially more time. Follow-up telephone contact was often required to clarify specific points as the models were developed.

The first (or prototype) PIP was based on Project Catch-Up and was developed without a model through an iterative process involving close coordination between RMC Research Corporation and Learning Achievement Corporation. An External Review Panel comprised of two teachers, two school principals, and two "experts in compensatory education" also contributed significantly to the design process by reviewing and commenting on early ideas and draft materials. A similar role was played by a large number of representatives from various offices within the U. S. Office of Education and by members of the National Advisory Council on the Education of Disadvantaged Children.

The first formal review was held in California in mid-November 1973 and involved all of these groups. In mid-January 1974, a second review was held in Washington, D. C., but the External Review Panel did not participate. A third review was held in California in late April 1974, and the External Review Panel was again actively involved.

By the time of the second review meeting, the prototype PIP was essentially complete although most of the components were not in their final mediated form. Some additional revisions were made based upon comments received at the review meeting, but they were relatively minor. The third and final review concentrated on draft models and materials for the five effective projects still to be packaged.

Once the prototype PIP was approved, it served as a design guide for the subsequent packages. The project models provided detailed specifications for content and organization; the prototype PIP filled a similar role for details of formating and mediation.

The project models would not have had to be drawn up so formally or

in such great detail (a sample model is contained in Piestrup, 1974) had a single contractor been responsible for the entire development effort. Because Learning Achievement Corporation did the actual packaging, however, the project models also served as subcontractor work statements and, together with the prototype PIP, provided all the information needed to develop the package.

Scripts and other draft materials prepared by Learning Achievement Corporation were reviewed for adequacy and accuracy by members of the RMC project staff before final taping or typesetting. As far as possible, these materials were also reviewed by the project directors at the originating sites.

Two PIPs, in their final form, are pictured in Figures 2 and 3. The boxes themselves are approximately 23 1/2 inches long, 14 1/2 inches high, and 13 inches deep. They contain ten upright drawers, one for each of the first eight PIP components and two for the ninth component, the Hardware/Software Packet. There is also a large drawer at the top of the box for oversize artwork and materials. The typical PIP contains several hundred pages of amply illustrated printed material including wall-size management displays, one or more filmstrips with accompanying audio cassettes, original artwork and/or photographic materials illustrating room arrangements and decorations, and manufacturers' brochures and order forms for core hardware and software items.

V. INITIATING THE FIELD TRYOUT

Quite early in fiscal year 1974, planning was initiated within U.S.O.E. for a field tryout of the Project Information Packages. Proposals from school districts interested in adopting one of the PIP models were solicited in spring of 1974 and grants were awarded to 21 sites in June. Two sites subsequently dropped out.

The original plan was to test each of the PIPs at three sites, but for a variety of reasons--including the two dropouts--the number of sites per PIP ultimately ranged from two to five. The following sites are currently implementing the PIP projects:

Project Catch-Up

Bloomington, Indianna
Wayne City, Illinois
Providence Forge, Virginia
Galax, Virginia
Brookport, Illinois

Project Conquest

Benton Harbor, Michigan
Cleveland, Ohio
Gloversville, New York

High Intensity Tutoring

Lexington, Mississippi
Olean, New York

Intensive Reading Instructional Teams

Oklahoma City, Oklahoma
Schenectady, New York
Bloomington, Indianna

Programed Tutorial Reading

Canton, Mississippi

Dallas, Texas

Project R-3

Lake Village, Arkansas

Lorain, Ohio

Charlotte, North Carolina

Schenectady, New York

The purpose of the field tryout is twofold. The first objective is to determine whether, or to what extent, Project Information Packages can serve as a viable means for replicating exemplary educational practices. The second objective, assuming that PIPs are viable replication mechanisms, is to identify deficiencies in the packages themselves and revise them before more general distribution is undertaken.

To achieve these objectives, U.S.O.E.'s Office of Planning, Budgeting, and Evaluation awarded a contract to the Stanford Research Institute of Menlo Park, California to conduct both a process and outcome evaluation of the field tryout. RMC Research Corporation will be working with SRI over the two-year period of the evaluation study. A report summarizing the first year's results is scheduled for publication in the fall of 1975.

Delivery of the PIPs to the replication sites occurred substantially later than would have been optimum. Planning and installation phases of the replication process had, consequently, to be substantially compressed. While this unfortunate situation makes it impossible to determine how well the PIPs would have worked had they been available earlier, there is already some evidence that at least some of the PIPs are resulting in successful replication at some of the sites.

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